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# Fallacy Forward: Situating fallacy theory

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**ABSTRACT:** I will situate the fallacies approach to reasoning with the aim of making it more relevant to contemporary life and thus intellectually significant and valuable as a method for teaching reasoning. This entails a revision that will relegate some of the traditional fallacies to the realm of history and introduce more recently recognized problems in reasoning. Some newly recognized problems that demand attention are revealed by contemporary science studies, which reveal at least two tenacious problems in reasoning that I will explore in this paper. One of these problems is androcentrism, a ubiquitous problem with reasoning that feminists exposed in the twentieth century but that continues to pervade people's reasoning. The other is biological reductionism in at least two specific forms: genetic determinism and adaptationism.

**KEYWORDS:** adaptation, androcentrism, biology, education, fallacy, fallacies, feminism, reductionism, selection, science

## 1. INTRODUCTION

In this paper I explore the potential to situate and revise the fallacies approach to reasoning with the aim of recognizing and increasing its relevance to contemporary life and its pedagogical value; a side-effect this approach is that it raises new and important intellectual and scholarly issues about fallacies. The revision requires relegating some of the traditional fallacies to the realm of history and introducing more recently recognized problems in reasoning. Contemporary science studies indicate at least two persistent problems with reasoning that demand recognition by argumentation theorists. The first is the androcentric fallacy and the second is biological reductionism, most notably in the forms of genetic determinism and adaptationism. Acknowledging and teaching these fallacies will better equip our students to face difficulties of reasoning in their particular material and historical contexts.

I narrowly define fallacies as common forms of argumentative reasoning that appear correct but are not,<sup>1</sup> which emphasizes both their frequency and deceptive nature.

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<sup>1</sup> This is a narrow definition both because it excludes problematic reasoning and beliefs outside of argumentation, and because it insists that there be some appearance of correctness and correspondingly something potentially deceptive about the reasoning. The assumption of commonness is standard in treatments of fallacy, although problematically vague and often empirically unsupported. My suggestions of updates to fallacy theory aim to increase that empirical support.

The criterion of “commonness” or frequency requires that we keep in sight of the situational variance in forms of reasoning. Commonness does *not* require universality and may be particular to certain modes and contexts of argumentation. Relevance to particular contexts of reasoning can explain both the appearance of strength and the fact of weakness in an argument. For instance, what might count as a weakness in a scientific context, such as an appeal to emotion, may be a real strength around the dinner table, and conversely details of sampling may have relevance and provide strength to scientific claims that the dinner table conversation eschews. Analogously, many of the forms of reasoning that were important to Aristotle seem quite peculiar from our perspective.

Fallacy theory itself emerges from attention to specific and variable social situations, which sets a precedent for my approach, as does the fact that the fallacies that have seemed important have changed with historical context. Our own context reveals the operation of pernicious but persuasive androcentrism and biological reductionism, which I will explain in the bulk of the paper. There remains a great deal more to be done in situating fallacy theory than I can accomplish here, but I will finish by indicating some substantial intellectual and pedagogical implications.

## 2. SITUATING FALLACY THEORY IN THE PAST

Thinking about fallacy theory in terms of its material situation helps define not just the theory itself but what is meant by a fallacy. The history of fallacy reveals different concerns about vulnerability to error that theorists of argumentation have had at different historical periods, and among those concerns is the dependency of the error on more specific social contexts. The notion of fallacy is fairly recent, and not employed by either Aristotle or Locke, whose discussions of patterns in reasoning are nevertheless central among those that set the precedent for identifying what we now count as fallacies. Why some false moves often appear and have appeared reasonable cannot be answered in general. Thus, like Locke and Aristotle but at a much larger scale we must attend to the social constitution of what counts as an error, and what is deceptive about that form of erroneous reasoning, as well as what makes it common in certain material and historical circumstances.

Historical lists of what we now call fallacies of argumentation developed in an ad hoc manner based on forms of reasoning that raised quite various types of problem for their historical and material situations. This heterogeneity and historical variability is not a problem unless we have cause to maintain that difficulties with reasoning are unified, and there seems to be no such cause. Quite to the contrary, the dynamism and variety of human cultures and forms of reasoning suggests that obstacles to good reasoning may vary dramatically. Therefore, I suggest that we consider the heterogeneity of fallacies, their lack of a general nature, and the complexity of the concrete examples, to be strengths in the history the fallacies approach to critical thinking. The mistakenness of fallacies and what obscures those mistakes are particular to their cultural situations.

The situational dependence of fallacies is well recognized by some of the primary historical players. Aristotle recognized social context as significant for evaluating what we now refer to as fallacies of argumentation. He was ambivalent about the value of certain forms of persuasion, recognizing that the significance of a type of reasoning depends on social context. For certain situations Aristotle encouraged the use of

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sophistical refutations in all contexts. He not only explained but sometimes accepted their tactical value, as Hamblin explains (1993/1970, p. 52). While in many places Aristotle criticized dissembling techniques, his mixed evaluations of particular forms of persuasion indicate that he recognized that different social contexts involve different rules of debate (Hamblin 1993/1970, p. 61). Ultimately Aristotle seems to struggle as much as anyone with how to distinguish good reasoning from bad (Hamblin 1993/1970, p. 65). Hamblin explains that this struggle results especially from Aristotle's view that rhetorical force or persuasiveness can support logical validity (1993/1970, p. 72) rather than always competing with it such as to interfere with the recognition of good reasoning or mask it.

The problems that concerned Aristotle were specific to a type of public academic debate in ancient Greece in which one tries to refute an opponent's position. The refutations that Aristotle described as sophistical include a number of strategies that have little play in the 21<sup>st</sup> century global North, and therefore recent textbooks ignore many of the problems with reasoning that concerned him. Certain aspects of reasoning were of quite exclusive concern to the ancient Greek culture of argumentation, including for instance Aristotle's fallacy of accent in which a meaning shifts because of word order. That is a feature much less common in contemporary languages than in the language of ancient Greece.

There is a rich history of fallacies after Aristotle that leads me to our second point of interest: the fallacies identified based on John Locke's discussions of patterns of reasoning. While Locke acknowledged as did Aristotle the unqualified problems presented in mistaken formulations of syllogistic argument, his most significant contribution to the development of fallacy theory concerns forms of reasoning that he did not consider always to be problematic. The forms of argument *ad verecundiam* or appeal to authority, *ad ignorantiam* or appeal to ignorance, and *ad hominem* or appeal to the person Locke considers among persuasive forms of reasoning. He maintains that they are inferior to *ad iudicium* or appeal to proof because that promotes knowledge. Yet Locke seems to accept the first three means of argumentation as legitimate within practical political contexts (Hamblin 1993/1970, pp. 159-160).

Aristotle and Locke are only the most famous of philosophers to have recognized the need to qualify the conditions for identifying fallacies, to recognize that some strategies of argumentation are valid in some particular situations but not in others. This sensitivity to social context is a defining characteristic of fallacies as an approach to reasoning. The situatedness of fallacies applies beyond the informal fallacies, because even formal fallacies depend on an argument being appropriately translated into and adequately represented by a system of formal logic, which is to say it depends on the contexts defined by that specific logic. Sometimes formal logic is taught as a way to capture a variety of natural language arguments, but this is merely specious, at best a tool to grab student interest. All accounts of errors argumentation are specific to a culture of argumentation.

Recent centuries brought dramatic shifts in the European culture that includes Aristotle and Locke and that spread across the globe through colonization. There are many features we might consider about how our contexts of argumentation are different from those that interested earlier philosophers, including aspects of that colonization and our awareness of deeper and older problems with our heritage from the Greeks. At the same time we have seen the growth of science from a hobby of aristocrats into multiple

major international industries, which involve new forms of reasoning. Recent social philosophies of science such as Helen Longino's contextual empiricism (1990) maintain that the progress of scientific understanding depends on public debate, which suggests that the epistemological engine of science is argumentation. As powerful and beneficial as science has been, it has critics at many different levels. Constructive criticisms of science can be found throughout the discipline of science studies that draws on philosophy, history, and social science; it reveals a number of patterns of error in scientific reasoning that can be identified as fallacies. The first of these I will examine is androcentrism, and the second is biological reductionism; both reveal common problems with reasoning in the culture of the global North.

### 3. THE ANDROCENTRIC FALLACY

I define the androcentric fallacy as the mistaken assumption that what is male or masculine is most important. This may take the form of either using what is specifically masculine to set general standards or assuming that masculinity is in some way superior or primarily significant. We can find extensive evidence for this sort of reasoning in everyday discussion and argumentation, despite decades of feminist work to counteract it. This tenacity is strong evidence that the problem is not only common but very deep, even in contemporary science.

Much of feminist critique and especially the feminist critiques of science can be viewed as a project of revealing androcentric reasoning. Certainly there is more to sexism inside and outside of science than what goes on in argumentation and more to feminist critique than identifying androcentrism; yet argumentation is central to the development of scientific knowledge, and scouting for the priority accorded to masculinity is basic to feminist analysis. I will examine how two different areas of scientific reasoning involve androcentric arguments, beginning with the Gilligan-Kohlberg debate in developmental psychology. Second, Elisabeth Lloyd's study of the female orgasm shows how extensive and deep androcentric reasoning can be in science.

However, before we consider these case studies, I will explain the general reasons for treating androcentrism as a fallacy of presumption. *Ad hominem*, *ad verecundiam* and *ad ignorantiam* are sibling fallacies to androcentrism, which we might translate or generally describe as the "appeal to masculinity," just like an appeal to the person, to authority, or to ignorance. Considering inappropriate androcentric appeals as failures to demonstrate the relevance of a presumption allows us to recognize that androcentricity is *sometimes* appropriate, that is when the topic is only men, and *not* for instance women.<sup>2</sup> Taking a masculine standard provides for effective reasoning in medical research about men, and in romantic considerations about men, or in any other argument where the subject of inquiry is exclusively male. Fallacies of presumption are perversions of argument schemes that are quite worthy in other specific cases. This reflexivity holds for appeals to authority, and emotion, and many more forms of presumptive reasoning, as

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<sup>2</sup> When appropriate I choose to use the language of "men" and "women" which implies adult humans in place of the clinical "male" and "female" because it is important to recognize that these ideas affect people not just classifications, or concepts, or nonhumans. We should also keep in mind that androcentricity marginalizes intersex and transgender people as well as women. Gender dimorphism is a further problem with our reasoning, but I doubt we are yet ready to acknowledge that as fallacious.

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Douglas Walton argues (1996). The recognition of presumptive arguments as unacceptable versions of potentially acceptable argument schemes has also filtered into the textbooks, as evidenced by the fact that the fallacy of *ad verecundiam* is now most often described as *inappropriate* appeal to authority or expert opinion. Furthermore, historically, as I explained above, the fallacies of relevance or presumption, the “ad...” arguments have been recognized primarily based on the work of Locke, who originally viewed their strength to vary with social context.

Admittedly, androcentrism in reasoning can be a matter of linguistic ambiguity as when using masculine pronouns in English as if they were neutral, a practice now mostly exorcised from scholarly speech. Because ambiguities complicate androcentrism and hide it, we may have difficulty detecting deep androcentrism. Furthermore, there is a distinguishing rhetorical appeal to androcentricity in a patriarchal society, just as there is to authority in any society with divisions of cognitive labour (Hanrahan and Anthony 2005). People say of androcentric language that “it sounds better,” or “it’s less awkward.” This speaks to the persuasive force of androcentrism and indicates the tendency to be deceptive that distinguishes fallacies from other common errors in argumentation. Yet androcentrism is not only a semantic, psychological or rhetorical issue, but also a question of the *logic* that goes on in argumentation because of its presumptive significance; and it operates at many other levels for which I cannot begin to account.

Some might suggest that the androcentric fallacy is better understood as an appeal to emotion—masculine pride or feminine modesty, or as a hasty appeal based on masculinity instead of the broader humanity, such that it would amount to a form of “hasty generalization,” an evidential or scientific fallacy. I accept that all these factors and probably many more can play into androcentrism, just as linguistic ambiguities regarding noun gender have done. However, any one of these characterizations is too narrow, and we must recognize taking the masculine as ideal or fundamental to be a fallacy of presumption unto itself.

Lawrence Kohlberg’s research in developmental psychology is famously androcentric. Admittedly the differences between men and women that Kohlberg overlooked and that Carol Gilligan pointed out now seem to be based more on education than on gender. However that complication does not excuse the androcentrism in Kohlberg’s reasoning or disprove its existence, nor would it had women turned out to be the same as men in the development of moral reasoning. Kohlberg’s error results from assuming *both* androcentricity and fallacious classism. Whether or not Kohlberg was conscious of his prejudices, the academic audience that received his work certainly did not notice the methodological errors in his work until Gilligan revealed it. The difficulty of distinguishing whether a particular piece of bad argumentation is due to one type of error or another—androcentrism or classism in this case—is typical of fallacies. For instance, many circular arguments depend on ambiguous expressions, and fallacious appeals to authority may involve appeals to force.

The most extensive revelation of how androcentrism has undermined a whole area of science is certainly Lloyd’s exhaustive study of the biological research into the female orgasm (2005). Lloyd identifies androcentrism in two of the assumptions that turn up regularly in all of the twenty-one theories about the evolution of the female orgasm that she scrutinizes. These assumptions are specifically (1) “that sexual intercourse evokes the

same response in men and women, namely orgasm” (p. 224) and more generally (2) “that female sexual response is like male sexual response.” (p. 225)

For example, most accounts of the female orgasm assume it fosters pair bonding, and Desmond Morris’ 1967 theory is the influential source of this approach. In developing this theory, Morris’ assumption that sexual intercourse is the only context of female orgasm is not merely unwarranted but contrary to evidence available in the literature of the time, including work that Morris cites, such as Kinsey et al. (1953), and Masters and Johnson (1966). Thus Morris is led to the false conclusion, also disproved in the literature he cites, that females take longer to orgasm than males (Kinsey et al. 1953, 164).

Even more dramatically, Lloyd points out (2005, p. 58) that Gallop and Suarez in 1983 employ as evidence for their assumption that women become tired after orgasm the Kinsey et al. study from 1948 which is exclusively about male sexual response; and there was substantial further contrary evidence by the point at which Gallup and Suarez wrote. Three of the first eighteen accounts Lloyd analyses assume generally that female sexual response is like male. Further, eighteen of the full twenty-one different theories that Lloyd was able to identify assume that female orgasm occurs only in intercourse (Lloyd 2005, 204).

#### 4. BIOLOGICAL REDUCTIONISM

Another persistent problem with reasoning that has been identified by science studies and that we should recognize as a fallacy of presumption is biological reductionism. Certainly there is sometimes reason to assume that a characteristic of an organism has a distinctly biological origin (noting that “biological origin” can mean many different things). However, at least in the case of reasoning about human beings and other social animals there is need for extensive care in biological appeals. Because scientists recognize that biological forces such as genetics and natural selection are intertwined and interdependent with human culture, only in quite specific cases ought we to assume that a feature has a biological basis. Yet, biologically determinist accounts are often assumed without sufficient evidence. Therefore, I suggest that any automatic assumption that a feature has its source in either genetics or in natural selection is fallacious.

In the sciences of intelligence biological reductionism has been extremely destructive and politically pernicious, as Stephen Jay Gould argues in *The Mismeasure of Man* (1996). Gould argues that instead of appeals to genetics the better explanation of intelligence is cultural evolution, which is itself a genetic adaptation but allows for much quicker and more flexible adaptation than genetics can otherwise manage. Given that the available science supports the plasticity of not only intelligence but various social traits, a populace that can adequately appreciate evolutionary arguments must be wary of treating appeals to genetics as *prima facie* acceptable explanations for social phenomena.

It is likewise important to address adaptationism as a form of biological reductionism because of the increasing popularity and prevalence of evolutionary thinking, previously in the form of sociobiology and currently in the form of evolutionary psychology. Certainly there will remain debates over particular evolutionary arguments, but some *are* categorically bad and others are categorically good.

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The female orgasm is clearly quite plastic, in the technical biological sense: it is “widely variant dependent on the environment” (Lloyd 134). However, unlike the case of intelligence, there is no reason to believe that the plasticity of the female orgasm is itself directly selected. In general, plasticity decreases with selection, which narrows variability, thus focusing in on the optimal formation of a trait (Lloyd 135). Only in cases that plasticity itself is optimal, such as intelligence, which develops differently to suit demands in different environments, can plasticity be reasonably considered a selected trait (Lloyd 134-135). Without such indicators that the female orgasm works better by being variable, the variability of the female orgasm suggests instead that it was not selected at all. Although female sexual pleasure has direct advantages for reproduction, there is no specific reason to consider female orgasms selected. Thus, explaining a feature of a biological organism in terms of its separate selection is as problematic as androcentrism in the science of the female orgasm surveyed by Lloyd.

The alternate theory preferred by Lloyd, at least given the current evidence, is that the female orgasm is a “fantastic bonus” (Lloyd 2007), a benefit derived from the profound adaptive benefits of the male orgasm in providing for reproduction (2005; 2007). Lloyd finds to be best supported by the evidence Donald Symons’ “byproduct account” (Lloyd 2005, 107-148). Symons’ account is equally androcentric to any other account of the female orgasm, but that androcentrism does not play into the byproduct account itself but only into his interpretation of its implications (Lloyd 2005, 139-145).

The lack of the female orgasm’s adaptational status by no means undermines its social and political importance any more than it undermines the importance of reading, which is also not a genetic adaptation—books had no use on the African savannah. Likewise the male nipple was not directly significant in evolution, but a byproduct of the need for female nipples; they may function in much the same ways but male nipples did not directly impact on survival and reproduction.

The case of the female orgasm is not closed, but in this case and others it is time to recognize persistent adaptationism as fallacious, a hasty biological reductionism. There is clearly insufficient reason to assume biological determinism in the form of adaptationism just as it should not be assumed in the more superficial genetically determinant way in the sciences of intelligence. It is ironic that we end up with an androcentric evolutionary conclusion about the evolution of the female orgasm by resisting fallacious androcentricity in our reasoning about it; however evaluating argumentation schemes concerns the process not the product, and the evolutionary conclusion has *no* implications for the political status of the female orgasm.

The rhetorical appeal of biological reductionism is beyond question. Even Plato advocated using it to trick the people in the Republic into accepting their stations in life. People are to be taught the Myth of Er, which explains their social positions as a product of the type of metal in their souls. This reveals a human cognitive tendency toward biological reductionism, insofar as biological thinking existed in Plato’s time (Gould 1996). Furthermore, in the case of the female orgasm, women tend to be alarmed at the notion that their orgasms lack that significance, as if the biological origin were relevant to social and political significance. This impact was dramatically evident in the all-round hostility Lloyd received on the women’s television talk show, *The View* (Lloyd 2006). The hosts’ categorical rejection of Lloyd’s analysis indicates the attractiveness and commonality of biologically reductionist thinking and argumentation.

We may be able to classify biological reductionism as a contemporary manifestation of the Aristotelian fallacy of *accident*, in which accidental or contingent features are taken to imply general, necessary, or essential features. It has been very difficult to make sense of this fallacy in a culture that denies such essentialist thinking, *pace* Hilary Putnam. *Accident* seems rather meaningless in contemporary culture where there is no other general tendency to explicitly distinguish accidental from essential properties. Further exploration of the connection between biological reductionism and *accident* is beyond the scope of this paper. However, the apparent connection indicates how fallacies recognized in contemporary science studies may resonate with the past, and shows one way in which situating fallacy theory has significant intellectual dividends.

## 5. CONCLUSION: PRESENTLY SITUATING FALLACY THEORY

In beginning to consider ways to update fallacy theory and make it reflexive and progressive rather than static and archaic, there are a range of intellectual and scholarly implications, and some profound pedagogical implications. We must consider how androcentrism and biological reductionism fit into our lists of fallacies, and impact on the issues in fallacy theory. Fallacy theory can be further situated through empirical sources, taking science studies as the starting point. This progressive situation of fallacy theory will be fruitful as an educational tool, because it can be tailored to student needs to a degree beyond any other approach to reasoning.

To account for forms of sexism beyond androcentrism and to account for other patterns of socially unjust reasoning including racist and heterocentric appeals we might appeal to a general *hegemonic* reasoning, that is centering discussion on those with social privilege. Such a general notion is needed to replace the fallacy of provincialism identified by Howard Kahane in 1971 (pp. 54-56) that assumes the guilty arguer must be a member of the privileged group. It can only account for the androcentrism of men. Later on in Kahane's 1995 edition of *Logic and Contemporary Rhetoric* and the 2005 edition coauthored by Nancy Cavender stop treating provincialism as a *logical* fallacy at all and begin treating it as a character-driven impediment to cogent reasoning (1995, pp. 107-109; 2005, pp. 119-124). The later account is more adequate in some ways, because it relates provincialism to prejudice and to stereotypes in various ways, which we might assume could be held by anyone in society however privileged or oppressed. However, Kahane and Cavender still neglect to recognize that these dispositions are so widespread that they are not merely personal idiosyncrasies, but a pervasive disruption the *logic* of argumentation itself, as feminist science studies demonstrates about androcentrism. Furthermore, Kahane and Cavender persistently assume that only insiders would privilege insiders, neglecting the reality of psychological oppression and the play of stereotypes and prejudices far beyond the exchanges among those who benefit from their currency. Presuming the perspective of the insiders, omitting the experience of people on the social margins, such as women, indicates that hegemonic reasoning. This unfortunate taint on the very important steps forward made by Kahane in identifying provincialism can be remedied by reconceiving the problem in terms of hegemonies, including androcentrism.

In fact, at the beginning of the 21<sup>st</sup> century there is no further need to empirically demonstrate the commonality in the global North or the falseness of androcentrism; and

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there can be no better demonstration of an *appearance* of correct reasoning than that false moves are made so frequently. On the other hand, there is a great deal more scholarly work to be done on biological reductionism, ascertaining what forms might be appropriate and what might not.

Furthermore there are many questions to be asked about the attractiveness of biological reductionism. Why *does* it attract us? What is the source of that commonplace naturalistic urge? Why have theorists failed to recognize that the fallacy of accident persists in that form? These questions are important for the epistemology of science, especially given the recent flood of sociobiological and evolutionary psychological books and articles. These popular arguments satisfy our taste for biological reductionism but may create a substantial ignorance that interferes with real understanding and knowledge.<sup>3</sup>

I expect that other fallacies can be recognized also through science studies, which will help us also to flesh out the hegemonic fallacy in regard to race, and class, and other dimensions of social injustice aside from sexism. We should also seek input from cognitive psychology to provide further empirical basis for a list of contemporary fallacies. New recognitions of mistakes in reasoning might also be drawn from the emerging literature on experimental philosophy that shows our intuitions about good moral reasoning are often quite different from how we actually reason.

All of these measures will better situate our discussion of fallacies. However, this is not a job that can ever be complete because of the ways in which our reasoning and argumentation change and develop. As our reasoning progresses and changes we will have new perspectives on argumentation and also new forms of argumentation to consider.

The forms of argumentation that can be addressed in a list of fallacies also need to be tailored to the audience, the situation, and especially the needs and abilities of students. As a means of teaching reasoning, a situated fallacy theory could be ideal because it could be tailored to the particular context and content of education. Although in the global North in general we need to address the androcentric fallacy, identifying the problem as a fallacy may help to eliminate it historically. It might become diminished substantially enough that there would no longer be a need to identify it as a fallacy. Similarly, Hamblin suggests that Aristotle may well have eradicated the fallacy of accent by pointing it out and encouraging the development of written accents (1995/70, p. 23).

There remains a lot more to be understood about biological reductionism, but it is clearly needed in classes of science students, especially given the popularity of evolutionary psychology. Among additions and revisions to our lists of fallacies, we may find new species of previously recognized fallacies, such as accent, but also fallacies arising from new forms of reasoning, especially in the sciences. For instance, economics seems lead us occasionally into the fallacy of “eating money,” identified by Val Plumwood (personal correspondence). This mistake of economic growth as a measure of human welfare is common in industrialized capitalist society, but needs especially to be recognized by business and economics students who seem most vulnerable to it. How else we might situate fallacies and tailor the instruction of critical thinking to particular student needs and epistemic responsibilities is an open question. There is a great deal more work to be done in situating fallacy theory, and scholars must treat this approach as

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<sup>3</sup> This understanding of ignorance is developed by Charles Mills (1991).

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an ongoing responsibility, especially to prepare our students for the cognitive challenges in a changed and changing world.

ACKNOWLEDGEMENTS: I am grateful to members of the Centre for Research in Reasoning, Argumentation and Rhetoric at the University of Windsor for their constructive criticism at the April 2009 Colloquium on Fallacies: it helped me to refine the aims and commitments of this paper, and thus to give this fledgling project some wings. Dina D'Andrea assisted with the research on this project with financial support of the University of Windsor Outstanding Scholars Program.

[Link to commentary](#)

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